

## Abstract

A process for the production of difluoromethane (HFC-32), 1,1,1-trifluoroethane (HFC-143a) and 1,1-difluoroethane (HFC-152a). In the  
5 process the following steps are employed:

- (a) providing a reaction vessel,
- (b) providing in the reaction vessel activated carbon impregnated with a strong Lewis acid fluorination catalyst selected from halides of As, Sb, Al, Ti, In, V, Nb, Ta, Zr and Hf ,
- 10 (c) activating the catalyst by passing through the activated carbon impregnated with a strong Lewis acid fluorination catalyst anhydrous hydrogen fluoride gas and chlorine gas,
- (d) contacting, in a vapor state in the reaction vessel containing the activated catalyst, hydrogen fluoride and one or more halogenated  
15 hydrocarbons selected from chlorofluoromethane, dichloromethane, 1,1,1-trichloroethane, vinyl chloride, 1,1-dichloroethylene, 1,2-dichloroethylene, 1,2-dichloroethane, and 1,1-dichloroethane for a time and at a temperature to produce a product stream comprising hydrofluorocarbon product(s)  
20 corresponding to the chlorinated hydrocarbon reactant(s), and one or more of hydrogen chloride, unreacted chlorinated hydrocarbon reactant(s), under-fluorinated intermediates, and unreacted hydrogen fluoride, and
- (e) separating the hydrofluorocarbon product(s) from the product  
25 stream.